

IN THE CLAIMS:

1 1. (Currently Amended) A method for producing a plasma display panel that has a
2 front substrate and a back substrate disposed to face each other, the method comprising:
3 a pre-baking phosphor layer forming step for forming a pre-baking phosphor layer
4 containing a phosphor and an organic binder, on at least one of the surfaces of the front substrate
5 and the back substrate that are to face each other;
6 a sealing material applying step for applying a sealing material that softens with
7 heat, to the peripheral region of at least one of the surfaces of the front and back substrates that
8 are to face each other;
9 a stacking step for, after the pre-baking phosphor layer forming step and the
10 sealing material applying step, disposing the front and back substrates to face each other in a
11 stack; and
12 a baking step for heating the front and back substrates to burn out the organic
13 binder while supplying a dry gas containing oxygen to an internal space that is formed between
14 the front and back substrates, wherein the organic binder is burned out and the sealing material is
15 softened to enable bonding of the front and back substrates in a simultaneous operation of raising
16 and lowering temperature.

1 2. (Original) The method of Claim 1, wherein
2 the sealing material is a glass frit that softens at a temperature lower than the
3 highest temperature achieved in the baking step.

1 3. (Original) The method of Claim 2, wherein
2 the glass frit has a softening point of 400 °C or higher.

1 4. (Original) The method of Claim 2 further comprising a preliminary baking step
2 between the sealing material applying step and the stacking step, wherein
3 in the preliminary baking step, the glass frit is heated to a predetermined
4 temperature to be preliminarily baked.

1 5. (Original) The method of Claim 1, wherein
2 the sealing material is a glass frit that is substantially composed of a crystalline
3 glass.

1 6. (Original) The method of Claim 5, wherein
2 in the baking step, the heating is suspended for a predetermined time period after
3 a temperature of the front and back substrates reaches to a predetermined temperature, then the
4 heating is resumed to burn out the organic binder.

1 7. (Original) The method of Claim 1, wherein
2 at least one of the front and back substrates has thickness of 2 mm or less.

1 8. (Original) The method of Claim 1, wherein
2 a flow rate of the dry gas supplied to the internal space is 1 CCM per 1 cm³ of the
3 internal space.

1 9. (Original) The method of Claim 8, wherein
2 a flow rate of oxygen contained in the dry gas supplied to the internal space is 0.5
3 CCM per 1 cm³ of the internal space.

1 10. (Original) The method of Claim 1, wherein
2 in the baking step, the front and back substrates are heated while being secured by
3 pressure applied by a plurality of pressing units attached to the front and back substrates.

1 11. (Original) The method of Claim 10, wherein
2 the plurality of pressing units apply pressure to the peripheral region of the front
3 and back substrates.

1 12. (Original) The method of Claim 11, wherein
2 the plurality of pressing units apply pressure to the front and back substrates
3 inward of the sealing material, excluding the central region of the front and back substrates.

1 13. (Original) The method of Claim 1 further comprising
2 an exhausting step for exhausting gases from the internal space, wherein
3 the exhausting step is started before the front and back substrates cool off to
4 ambient temperature after the baking step.

1 14. (Original) The method of Claim 13, wherein
2 the exhausting step is completed before the front and back substrates cool off to
3 ambient temperature after the baking step.

1 15. (Original) The method of Claim 14, wherein
2 in the exhausting step, gases are exhausted while the internal space is maintained
3 at a constant temperature.

1 16. (Currently Amended) A method for producing a plasma display panel that has a
2 front substrate and a back substrate disposed to face each other, the method comprising:

3 a pre-baking phosphor layer forming step for forming a pre-baking phosphor layer
4 containing a phosphor and an organic binder, on at least one of surfaces of the front substrate and
5 the back substrate that are to face each other;

6 a sealing material applying step for applying a sealing material that softens with
7 heat, to the peripheral region of one of the surfaces of the front and back substrates that are to
8 face each other;

9 a baking step for, after the pre-baking phosphor layer forming step and the sealing
10 material applying step, burning out the organic binder by heating the front and back substrates in
11 a furnace while the surfaces of the front and back substrates are positioned to face each other and
12 are separated from each other to provide enough space to allow gases to escape, from an internal
13 space between the faces of substrates, to outside of the substrates; and

14 a bonding step for disposing the front and back substrates to contact the sealing
15 material for bonding the front and back substrates by keeping the front and back substrates at a
16 temperature higher than the softening point of the sealing material, wherein the organic binder is
17 burned out and the sealing material is softened to enable bonding of the front and back substrates
18 in a simultaneous operation of raising and lowering temperature.

1 17. (Original) The method of Claim 16, wherein

2 in the bonding step, after the front and back substrates are disposed to face each
3 other, a dry gas containing oxygen is supplied to an internal space formed between the front and
4 back substrates.

1 18. (Original) The method of Claim 16, wherein

2 the sealing material is a glass frit.

1 19. (Original) The method of Claim 18, wherein

2 the glass frit has a softening point of 400 °C or higher.

1 20. (Original) The method of Claim 19, wherein

2 in the bonding step, the front and back substrates are heated to a temperature in a
3 range of 400 °C to 520 °C.

1 21. (Original) The method of Claim 16, wherein

2 in the baking step, the front and back substrates are heated in an atmosphere of a
3 dry gas.

1 22. (Original) The method of Claim 21, wherein

2 in the baking step, the front and back substrates are heated in an atmosphere of a
3 circulated dry gas.

1 23. (Original) The method of Claim 21, wherein

2 the dry gas used in the baking step contains oxygen.

1 24. (Original) The method of Claim 16, wherein

2 in the baking step, gases released from the front and back substrates as the
3 substrates are heated are removed forcibly.

1 25. (Original) The method of Claim 16 further comprising a disposing step and a
2 separating step in succession between the sealing material applying step and the baking step,
3 wherein

4 in the disposing step, the front and back substrates are disposed to face each other,
5 then

6 in the separating step, the front and back substrates are relatively moved apart
7 along a predetermined path, and

8 in the bonding step, the front and back substrates are relatively moved together
9 along the predetermined path so that the front and back substrates are disposed to face each
10 other.

1 26. (Original) The method of Claim 25, wherein

2 in the separating step and the bonding step, the front and back substrates are
3 moved parallel to each other.

1 27. (Original) The method of Claim 16, wherein

2 positioning markers are formed on surfaces of the front and back substrates before
3 the baking step, and

4 in the bonding step, the front and back substrates are positioned using the
5 positioning markers so as to face each other.

1 28. (Original) The method of Claim 16 further comprising

2 an exhausting step for exhausting gases from the internal space, wherein

the exhausting step is started before the front and back substrates cool off to ambient temperature after the bonding step.

29. (Original) The method of Claim 28, wherein
the exhausting step is completed before the front and back substrates cool off to ambient temperature after the baking step.

30. (Original) The method of Claim 29, wherein
in the exhausting step, gases are exhausted while the internal space is maintained at a constant temperature.

31. (Original) A plasma display panel production apparatus for use in the baking step and the bonding step in the method of Claim 16, comprising:
a heating furnace for housing and heating the front and back substrates disposed to face each other; and
a dry gas supplying mechanism for supplying a dry gas to an internal space formed between the front and back substrates.

32. (Original) The plasma display panel production apparatus of Claim 31 further comprising
an exhausting mechanism for exhausting gases from the internal space.

33. (Previously Presented) The method of Claim 1, wherein
BaMgAl₁₀O₁₇:Eu is used as a phosphor constituting a blue phosphor layer.

34-39. (Cancelled)

1 40. (New) A method for producing a plasma display panel that has a front substrate
2 and a back substrate disposed to face each other, the method comprising:

3 a pre-baking phosphor layer forming step for forming a pre-baking phosphor layer
4 containing a phosphor and an organic binder, on at least one of surfaces of the front substrate and
5 the back substrate that are to face each other;

6 a sealing material applying step for applying a sealing material that softens with
7 heat, to the peripheral region of one of the surfaces of the front and back substrates that are to
8 face each other;

9 a disposing step wherein the front and back substrates are disposed to face each
10 other;

11 a separating step wherein the front and back substrates are relatively moved apart
12 along a predetermined path;

13 a baking step for, after the pre-baking phosphor layer forming step and the sealing
14 material applying step, burning out the organic binder by heating the front and back substrates in
15 a furnace while the surfaces of the front and back substrates are positioned to face each other and
16 are separated from each other to provide enough space to allow gases to escape, from an internal
17 space between the faces of substrates, to outside of the substrates; and

18 a bonding step for disposing the front and back substrates to contact the sealing
19 material for bonding the front and back substrates by relatively moving the front and back
20 substrates together along the predetermined path so that the front and back substrates are
21 disposed to face each other while keeping the front and back substrates at a temperature higher
22 than the softening point of the sealing material.

1 41. (New) The method of Claim 40, wherein
2 in the separating step and the bonding step, the front and back substrates are
3 moved parallel to each other.